

REMARKS

Claims 1-41 and 52-84 are currently pending in this application. Claims 37, 55, 69-71 and 78-80 have been amended to correct a clerical error to remove terms in parentheses. Claim 15 is amended to recite that the colored fluid is free from insoluble coloring agents. Support for the amendment is found at least at page 9, paragraph 22. Applicants respectfully submit that the amendment does not introduce new matter.

Claim Rejections under 35 U.S.C. § 112, second paragraph

Claims 37, 55-62, 69-71, 78 and 80 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite. The Examiner objected that the parentheses in the claim were indefinite. Applicants have removed parentheses from these claims, and request withdrawal of the rejection.

Claim Rejections Under 35 U.S.C. § 103

Independent Claim 1

Claim 1 was rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Publication 2006/0110551 to Shastry et al. (“Shastry”) in view of WO 01/94116 to Willcocks et al. (“Willcocks”) and U.S. Patent 4,531,292 to Pasternak et al. (“Pasternak”) and further in view of U.S. Patent No. 6,623,553 to Russell et al. (“Russell”) and U.S. Publication 2003/0101902 to Reitnauer et al. (“Reitnauer”).

The colored fluid of claim 1 requires a food grade dye, glycerine, at least about 25 wt. % 1,2-propanediol, and optionally water; wherein the 1,2- propanediol, glycerine and any optional water make up at least about 90 wt. % of the colored fluid, and any water present makes up no more than about 35 wt. % of the colored fluid.

Applicants respectfully submit that a *prima facie* case of obviousness has not been established because the Office action fails to articulate reasoning with a rational underpinning to support a legal conclusion of obviousness. The Supreme Court has made clear that “rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR Int’l. Co. v. Teleflex, Inc., et al.*, 127 S. Ct. 1727 (2007).

First, there is no teaching, suggestion or motivation to combine the references to make the claimed invention. The Supreme Court has clarified that motivation to combine reference teachings is required: “it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.” *KSR Int’l. Co. v. Teleflex, Inc., et al.*, 127 S. Ct. 1727 (2007).

Applicants submit that there is no suggestion or motivation in the references themselves, or in the knowledge of one of ordinary skill in the art, to combine or modify the references’ teachings to result in the colored fluid of claim 1. Both Shastry and Willcocks disclose ink jet inks that contain a pigment and a limited amount of dispersant for the pigment. Pasternak and Russell, in contrast, describe inks used for mechanical transfer of images using transfer sheets or plates, and Reitnauer discloses a very specific type of hot melt ink containing colored waxes (*see* Examples 1-4). Accordingly, the inks of the cited references are adapted for use in disparate printing methods. Those of skill in the art would not be motivated to combine the teachings of the references, because they would have no reason to suppose that inks suitable for mechanical transfer would function well in ink jet printing, or that the components of a hot melt ink could be combined into a pigment-based ink formulation. This is not least because the properties and characteristics of pigment-based ink-jet inks, inks for mechanical image transfer and hot-melt inks are different from each other, and from the colored fluid recited in claim 1. One of skill in the art would not expect that components from one type of ink could be substituted in another type, such that the colored fluids would function in the same way.

The Examiner is reminded that “[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.” *In re Fine*, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988). In selecting five references to reject claim 1, and without providing basis for combining or modifying their teachings, the Examiner appears to have relied on impermissible hindsight to reconstruct Applicants’ invention as recited in claim 1.

It appears, however, that the Examiner may have intended only to apply Russell and Reitnauer with respect to claims reciting viscosity values and silt density index values, respectively, neither of which is recited in claim 1. Accordingly, the Examiner would be relying on the combination of Shastry, Willcocks and Pasternak to reject claim 1. Nevertheless, one skilled in the art still would not be motivated to combine the ink jet inks of Shastry and

Willcocks with the inks of Pasternak which are used for the mechanical transfer of images using transfer sheets or plates.

Even assuming, *arguendo*, that the references are combinable, the references, taken alone or in combination, still do not teach or suggest each and every element of claim 1. Shastry does not teach or suggest colored fluids including 1,2-propanediol, let alone at least about 25 wt. % 1,2-propanediol as required by claim 1.

Willcocks and Pasternak do not cure the deficiencies of Shastry. Willcocks discloses pigmented inks that may include about 1-48 % glycerine, propylene glycol or polypropylene glycol as a dispersant for the pigment. Page 27, line 21 bridging to page 28, line 3. Claim 1 specifies that “any water present makes up no more than about 35 wt. % of the colored fluid,” but also specifies that “1,2-propanediol, glycerine and any optional water make up at least about 90 wt. % of the colored fluid.” Willcocks fails to teach or suggest these elements because even if one of skill in the art were to select only Willcocks’s propylene glycol and glycerol as a dispersant at the maximum amount of about 48 %, the inks cannot both comprise water making “up no more than about 35 wt. % of the colored fluid,” and “1,2-propanediol, glycerine and any optional water [making] up at least about 90 wt. % of the colored fluid.”

Pasternak discloses a pigmented ink for use in mechanical image transfer to foods containing 38 % water, 16 % glycerol and 22 % propylene glycol. Col. 16, lines 5-55. Accordingly, Pasternak fails to teach or suggest a colored fluid making up “no more than about 35 wt. % water.” Additionally, Pasternak does not teach or suggest colored fluid comprising “at least about 25 wt. % 1,2-propanediol.” Finally, Pasternak does not teach or suggest a colored fluid “wherein the 1,2-propanediol, glycerine and any optional water make up at least about 90 wt. % of the colored fluid.” Instead, Pasternak’s water, glycerol and propylene glycol total only 76 wt. %.

It appears that Russell and Reitnauer are being cited only with respect to claims reciting viscosity values and silt density index values, respectively, neither of which is recited in claim 1. Nevertheless, neither Russell nor Reitnauer teach or suggest a colored fluid comprising the amounts of propylene glycol and glycerin required by claim 1. Accordingly, Russell and Reitnauer, alone or in combination, do not cure the deficiencies of Shastry, Willcocks and Pasternak.

Consequently, even assuming that the references are combinable, which again they are

not, they still do not teach or suggest, among other things, a food grade colored fluid “wherein 1,2-propanediol, glycerine and any optional water make up at least about 90 wt. % of the colored fluid” and “no more than about 35 wt. % water.” And one of skill in the art still would not be motivated to modify these teachings in any way to arrive at these particular amounts. The Examiner is reminded that a “particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a *recognized result*, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation.” *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977)” (MPEP 2144.05, IIB) (emphasis added). One of skill in the art would not be motivated to incorporate 1,2-propanediol, glycerine and any optional water to at least about 90 wt. % of the colored fluid, while simultaneously keeping the amount of water below about 35 wt. %, as required by claim 1, because both Shastry and Willcocks disclose that the dispersant for the pigment is limited to about half or less of the total weight percentage of the ink. Consistent with these disclosures, Pasternak discloses a pigmented ink containing only 38 % propylene glycol and glycerol combined. *See* Table, col. 16. Russell discloses inks containing 70-80 % of a sweetener, and optionally containing low amounts of glycerine. *See* col. 2, line 66 to col. 3, line 2 and lines 33-35. Reitnauer discloses inks preferably containing 50-99 wt. % wax, and optionally containing low amounts propylene glycol or glycerin. *See* paragraphs [0019] and [0031]. Russell and Reitnauer therefore also fail to allow for the amounts of glycerine and 1,2-propanediol required by claim 1. Accordingly, one of skill in the art would not include glycerin and propylene glycol in the amounts required by claim 1 using routine optimization, based on the disclosure of the cited references.

Consequently, allowance of claim 1 is respectfully requested.

Claims 2-14 and 52-54

Claims 2-14 and 52-54 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Shastry in view of Willcocks and Pasternak, and further in view of Russell and Reitnauer. Claims 2-14 and 52-54 each depend from allowable claim 1, and accordingly are allowable for at least the reasons set forth above for claim 1.

Claims 4-5 and 10-13 are also allowable for the reasons set forth below.

Claims 4 and 5

Claim 4 requires that the colored fluid include no more than about 20 wt. % water. Claim 5 requires that the colored fluid include no more than about 1 wt. % water. Claims 4 and 5 are further allowable because Shastry does not teach or suggest a colored fluid containing no more than about 20 wt. % water, or no more than about 1 wt. % water, in a colored fluid wherein 1,2-propanediol, glycerine and any optional water make up at least about 90 wt. % of the colored fluid.

Shastry discloses water-based pigmented inks that do not include glycerin and a food grade glycol in the amounts required by claims 4 and 5. Moreover, Shastry defines “water-based” to mean “containing more water than non-aqueous solvent, which generally is substantially less non-aqueous solvent than conventional food-grade inks referred to as ‘solvent-based.’” Page 2, para [0017]. Accordingly, Shastry does not teach or suggest a colored fluid containing no more than about 20 wt. % water or no more than about 1% water as required by claims 4 and 5.

The Examiner appears to suggest that one of skill in the art would have been motivated to modify the amount of solvent to within the claimed ranges, based on Shastry’s limited disclosure in paragraphs 36 and 37 of non-aqueous solvent-based inks. Office action, page 4, lines 17-25. However, as is evident from Shastry’s definitions of “water-based” and “solvent-based” noted above and defined in paragraph [0017], the solvent-based inks mentioned in paragraphs [0036] and [0037] are entirely discrete and distinct from the water-based pigmented inks discussed in paragraphs [0033] and [0034]. Shastry does not indicate what solvents may be suitable in solvent based inks, other than “solvent based inks includes substantially and completely fat or oil based inks.” Page 4, para [0036]. Accordingly, Shastry provides no teaching or suggestion to include glycerin and a glycol in a solvent-based ink, let alone in a colored fluid in the amounts required by claims 4 and 5. Shastry also provides no reason that would motivate one of skill in the art to include a food grade glycol, glycerine and any optional water to make up at least about 90 wt. % of a colored fluid, wherein any water present makes up no more than about 20 wt. % or 1 wt. % of the colored fluid.

Willcocks and Pasternak fail to cure the deficiencies of Shastry. Willcocks does not teach or suggest a colored fluid comprising a food grade glycol, glycerine and any optional water making up at least about 90 wt. % of the colored fluid, wherein any water present makes up no

more than about 20 wt. % (claim 4) or 1 wt. % (claim 5) of the colored fluid. Rather, as noted above, Willcocks merely indicates that a dispersant for the pigment may include glycerine, propylene glycol or polypropylene glycol in an amount from about 1 percent to about 48 percent. Page 27, line 21 bridging to page 28, line 3. Even if one of skill in the art were to select only Willcocks's propylene glycol and glycerol as a dispersant at the maximum amount of about 48 %, Willcocks's inks cannot both comprise water making "up no more than about 20 wt. % or 1 wt. % of the colored fluid," and "food grade glycol, glycerine and any optional water [making] up at least about 90 wt. % of the colored fluid." Accordingly, there is no teaching or suggestion in Willcocks to formulate a colored fluid as recited in claims 4 or 5. Similarly, Pasternak teaches an ink having 38 % water, and does not teach or suggest a colored fluid having the formulation and properties of claims 4 or 5.

Again, it appears that Russell and Reitnauer are being cited only with respect to claims reciting viscosity values and silt density index values, respectively, neither of which is recited in claims 4 or 5. Nevertheless, neither Russell nor Reitnauer teach or suggest a colored fluid comprising the amounts of a food grade glycol, glycerin and water required by claims 4 or 5. Accordingly, Russell and Reitnauer, alone or in combination, do not cure the deficiencies of Shastry, Willcocks and Pasternak. Accordingly, a *prima facie* case of obviousness for claims 4 and 5 has not been established.

Claim 10

Claim 10 specifies that the colored fluid has a surface tension of about 20 to 60 dynes per cm at 25°C. Claim 10 is also allowable because for the same and similar reasons set forth below for claim 55, none of the references teach or suggest a colored fluid having the formulation and surface tension required by claim 10. Accordingly, a *prima facie* case of obviousness for claim 10 has not been established.

Claim 11

Claim 11 requires that the food grade colored fluid have a silt density index of at least 0.5. The Examiner asserts that motivation to make the silt density index as low as possible comes from Reitnauer's disclosure that an edible ink contains low amounts of components that are not listed as GRAS or are not EAFUS-listed. However, this limited disclosure fails to teach or suggest anything regarding the silt density index, not least because impurities that are not GRAS or EAFUS may be soluble, and consequently would make no contribution to the silt

density index value. Accordingly, a *prima facie* case of obviousness has not been established for claim 11.

Claims 12 and 13

Claim 12 requires that the food grade colored fluid have an inorganic salt content of no more than about 0.5 wt. %. Claim 13 requires that the food grade colored fluid have a chloride ion content of no more than about 0.5 wt. % and a sulfate ion content of no more than about 0.5 wt. %.

Claims 12 and 13 are also allowable because for the same and similar reasons set forth below for claim 20, none of the references explicitly teach or suggest a colored fluid comprising a food grade dye having the required amounts of an inorganic salt, chloride ion content or sulfate ion content required by claims 12 and 13. Therefore, a *prima facie* case of obviousness has not been established for claims 12 and 13.

Allowance of claims 2-14 and 52-54 is respectfully requested.

Independent Claim 15

Claim 15 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Shastry in view of Willcocks and Pasternak, and further in view of Russell and Reitnauer.

Claim 15 is directed to a food grade colored fluid having a viscosity of about 8 to 14 cps at 60° C, being free from insoluble coloring agents and comprising about 0.1 to 10 wt. % food grade dye, about 25 to 95 wt. % 1,2-propanediol, about 1 to 50 wt. % glycerine, and no more than about 35 wt. % water.

For the same and similar reasons set forth above with respect to claim 1, there is no teaching, suggestion or motivation to combine the references to make the subject matter of claim 15.

Moreover, even assuming, *arguendo*, that the references are combinable, the references, taken alone or in combination, still do not teach or suggest each and every element of claim 15. Claim 15 requires that the colored fluid be free from insoluble coloring agents. In contrast, Shastry discloses water-based pigmented inks that include glycerin as a “means of keeping the pigments dispersed.” Page 3, para [0034], emphasis added. Shastry does not teach or suggest a colored fluid free from insoluble coloring agents of the formulation recited in claim 15.

Willcocks and Pasternak fail to cure the deficiencies of Shastry. Willcocks discloses

pigmented inks which include “a suitable amount of glycerine and/or propylene glycol and/or polypropylene glycol . . . to adequately disperse the pigment...” Page 27, lines 27-30, emphasis added. Similarly, Pasternak discloses a pigmented ink for use in mechanical image transfer to foods containing 38 % water, 16 % glycerol and 22 % propylene glycol. Col. 16, lines 5-55, emphasis added.

It appears that Russell and Reitnauer are being cited only with respect to claims reciting viscosity values and silt density index values, respectively. Nonetheless, Russell and Reitnauer fail to cure the deficiencies of Shastry, Willcocks and Pasternak. Russell discloses inks containing 70-80 % of a sweetener, and optionally containing low amounts of glycerine. *See* col. 2, line 66 to col. 3, line 2 and lines 33-35. Reitnauer discloses inks preferably containing 50-99 wt. % wax, and optionally containing low amounts propylene glycol or glycerin. *See* paragraphs [0019] and [0031]. In contrast, claim 15 requires about 25 to 95 wt. % 1,2-propanediol and about 1 to 50 wt. % glycerine. There is no motivation to combine or modify the teachings of the cited references, not least because the chemistries and properties of dye-based, pigment-based, hot-melt, and high viscosity fluids are different. For example, one cannot substitute a pigment for a dye and expect the fluid to function in a comparable way. Accordingly one skilled in the art would not include glycerin and propylene glycol in a dye-based ink in the amounts required by claim 15.

Allowance of claim 15 is respectfully requested.

Independent Claim 16

Claim 16 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Shastry in view of Willcocks and Pasternak, and further in view of Russell and Reitnauer.

Claim 16 is directed to a colored fluid having a Brookfield viscosity at 60° C that changes by no more than 2 cps over a shear rate range from about 10 to 45 rpm, and comprises a food grade dye, a food grade glycol, optionally glycerine and optionally water; wherein the food grade glycol and any optional glycerine and water make up at least about 90 wt. % of the colored fluid, and any water present makes up no more than about 35 wt. % of the colored fluid.

For the same and similar reasons set forth above with respect to claim 1, there is no teaching, suggestion or motivation to combine the references to make the subject matter of claim 16.

Moreover, even assuming, *arguendo*, that the references are combinable, the references, taken alone or in combination, still do not teach or suggest each and every element of claim 16. As set forth above for claim 1, Shastry does not teach or suggest a colored fluid including 1,2-propanediol. Of course, because Shastry does not teach the composition of claim 16, Shastry also does not teach the composition of claim 16 having the viscosity property recited therein.

Willcocks and Pasternak do not cure the deficiencies of Shastry. Claim 16 specifies that “any water present makes up no more than about 35 wt. % of the colored fluid,” but also specifies that “the food grade glycol and any optional glycerine and water make up at least about 90 wt. % of the colored fluid.”

Willcocks and Pasternak fail to teach or suggest a colored fluid comprising a food grade glycol, optionally glycerine and optionally water; wherein the food grade glycol and any optional glycerine and water make up at least about 90 wt. % of the colored fluid, and any water present makes up no more than about 35 wt. % of the colored fluid. Rather, Willcocks teaches that “[a]s the inks of the invention are water based, the carrier fluid will typically be comprised of water and alcohol.” Page 26, lines 10-12. Willcocks also fails to teach or suggest maintaining a Brookfield viscosity at 60° C that changes by no more than 2 cps over a shear rate range from about 10 to 45 rpm in a colored fluid containing at least about 90 wt. % food grade glycol, optional glycerine and optional water, with any water present making up no more than about 35 wt. % of the colored fluid. Rather, as noted above, Willcocks merely indicates that a dispersant for the pigment may include glycerine, propylene glycol or polypropylene glycol in an amount from about 1 percent to about 48 percent. Page 27, line 21 bridging to page 28, line 3. Willcocks fails to teach or suggest these elements because even if one of skill in the art were to select only Willcocks’s propylene glycol and glycerol as a dispersant at the maximum amount of about 48 %, the inks cannot both comprise water making “up no more than about 35 wt. % of the colored fluid,” and “the food grade glycol and any optional glycerine and water make up at least about 90 wt. % of the colored fluid.”

Pasternak discloses a pigmented ink for use in mechanical image transfer to foods containing 38 % water, 16 % glycerol and 22 % propylene glycol. Col. 16, lines 5-55. Accordingly, Pasternak fails to teach or suggest a colored fluid making up “no more than about 35 wt. % water.” Pasternak also does not teach or suggest a colored fluid “the food grade glycol

and any optional glycerine and water make up at least about 90 wt. % of the colored fluid.” Instead, Pasternak’s water, glycerol and propylene glycol total only 76 wt. %.

Again, it appears that Russell and Reitnauer are being cited only with respect to claims reciting viscosity values and silt density index values, respectively. Neither Russell nor Reitnauer teach or suggest a colored fluid comprising the amounts of propylene glycol, glycerin and water required by claim 16. Accordingly, Russell and Reitnauer, alone or in combination, do not cure the deficiencies of Shastry, Willcocks and Pasternak.

Allowance of claim 16 is respectfully requested.

Claims 17-19

Claims 17-19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Shastry in view of Willcocks and Pasternak, and further in view of Russell and Reitnauer. Claims 17-19 each depend from allowable claim 16, and accordingly are allowable for at least the reasons set forth above for claim 16.

Claim 17 is also allowable for the reasons set forth below.

Claim 17

Claim 17 specifies that the colored fluid has a surface tension of about 35 to 50 dynes per cm at 25° C. Claim 17 is also allowable because for the same and similar reasons set forth below for claim 55, none of the references teach or suggest a colored fluid having the formulation and surface tension required by claim 17. Accordingly, a *prima facie* case of obviousness for claim 17 has not been established.

Allowance of claims 17-19 is respectfully requested.

Independent Claim 20

Claim 20 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Shastry in view of Willcocks and Pasternak, and further in view of Russell and Reitnauer.

The food grade colored fluid of claim 20 requires a food grade dye having an inorganic salt content of no more than about 0.5 wt. %, and at least about 25 wt. % 1,2-propanediol.

For the same and similar reasons set forth above with respect to claim 1, there is no teaching, suggestion or motivation to combine the references to make the subject matter of claim 20.

Moreover, even assuming, *arguendo*, that the references are combinable, the references, taken alone or in combination, still do not teach or suggest each and every element of claim 20. None of the cited references explicitly teach or suggest a food grade dye having an inorganic salt content of no more than about 0.5 wt. %, as required by claim 20. Indeed, none of the references provide any explicit teaching or motivation regarding the salt content of dyes at all, let alone to provide colored fluid comprising a dye having a salt content of no more than about 0.5 wt. %. As noted above, Shastry, Willcocks and Pasternak are each directed to pigment-based inks, and merely disclose that dyes may be included with the pigments. See Shastry, page 3, para [0034; Willcocks, page 30, line 23 to page 31, line 9; Pasternak, col. 16, lines 36-39. Moreover, none of the cited references provide any explicit reason or suggestion to provide a colored fluid with a dye having a salt content of no more than about 0.5 wt. %. Rather, Shastry and Willcocks each teach that the flow of ink droplets in drop on demand systems may be controlled by the addition of salts and other conductive agents. See Shastry, page 3, para [0027], emphasis added and Willcocks, page 2, lines 20-22. Willcocks further discloses that it is “possible to use salts or other compounds to charge the pigmented particles and therefore help disperse the pigments.” Page 28, lines 13-15. Pasternak, Russell and Reitnauer fail to cure the deficiencies of Shastry and Willcocks, because they also do not explicitly teach or suggest dye having any particular salt content, let alone including such a dye in the colored fluid as required by claim 20.

The Examiner appears to allege that motivation to limit the salt content of the dye to no more than about 0.5 wt. % comes from Reitnauer’s disclosure at paragraph [0013] that “[a]n ‘edible ink’ is an ink that contains less than 100 ppm by weight of any impurities, i.e., any components that are not listed as GRAS or are not EAFUS.” Office action, page 7, lines 3-15. However, no reasoning has been articulated with some rational underpinning as to how this disclosure relates in any way to the salt content of the dye required in the colored fluid of claim 20. In particular, Applicants note that many salts including, for example, sodium chloride are listed as GRAS. Moreover, as set forth above for claim 1, the Examiner has failed to articulate any reasoning as to why one of skill in the art would be motivated to combine the teachings of Reitnauer, which are directed to hot-melt inks, with the teachings of the other references.

Allowance of claim 20 is respectfully requested.

Claims 21-22

Claims 21-22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Shastry in view of Willcocks and Pasternak, and further in view of Russell and Reitnauer. Claims 21-22 each depend from allowable claim 20, and accordingly are allowable for at least the reasons set forth above for claim 20.

Allowance of claims 21-22 is respectfully requested.

Independent Claim 23

Claim 23 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Shastry in view of Willcocks and Pasternak, and further in view of Russell and Reitnauer.

The food grade colored fluid of claim 23 has a viscosity of about 35 to 65 cps at 25° C and requires a food grade dye and at least about 70 wt. % 1,2-propanediol, glycerine or a mixture thereof.

For the same and similar reasons set forth above with respect to claim 1, there is no teaching, suggestion or motivation to combine the references to arrive at the subject matter of claim 23.

Moreover, even assuming, *arguendo*, that the references are combinable, the references, taken alone or in combination, still do not teach or suggest each and every element of claim 23. Shastry discloses that “a dispersant, such as glycerine or other polyol ... is used in an amount between 1.0 percent by weight and 50 percent by weight.” Page 3, para [0034]. Therefore, Shastry does not teach or suggest including at least about 70 wt. % 1,2-propanediol, glycerine or a mixture thereof in a colored fluid.

Willcocks and Pasternak do not cure the deficiencies of Shastry. Willcocks discloses pigmented inks that may include about 1-48 % glycerine, propylene glycol or polypropylene glycol as a dispersant for the pigment. Page 27, line 21 bridging to page 28, line 3. Pasternak discloses a pigmented ink for use in mechanical image transfer to foods containing 16 % glycerol and 22 % propylene glycol. Col. 16, lines 5-55. Accordingly, Willcocks and Pasternak fail to teach or suggest a colored fluid comprising “at least about 70 wt. % 1,2-propanediol, glycerine or a mixture thereof.”

Again, it appears that Russell and Reitnauer are being cited only with respect to claims reciting viscosity values and silt density index values, respectively. Nevertheless, neither Russell nor Reitnauer teach or suggest a colored fluid comprising the amounts of propylene glycol and

glycerin required by claim 1. Accordingly, Russell and Reitnauer, alone or in combination, do not cure the deficiencies of Shastry, Willcocks and Pasternak.

Consequently, even assuming that the references are combinable, which again they are not, they still do not teach or suggest, among other things, a food grade colored fluid comprising “at least about 70 wt. % 1,2-propanediol, glycerine or a mixture thereof.” And one of skill in the art still would not be motivated to modify these teachings in any way to arrive at these particular amounts. The Examiner is reminded that a “particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a *recognized result*, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation.” *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977)” (MPEP 2144.05, IIB) (emphasis added). One of skill in the art would not be motivated to incorporate at least about 70 wt. % 1,2-propanediol, glycerine or a mixture thereof into a colored fluid as required by claim 23, because both Shastry and Willcocks disclose that the dispersant for the pigment is limited to about half or less of the total weight percentage of the ink. Consistent with these disclosures, Pasternak discloses a pigmented ink containing only 38 % propylene glycol and glycerol combined. *See* Table, col. 16. Russell discloses inks containing 70-80 % of a sweetener, and optionally containing low amounts of glycerine. *See* col. 2, line 66 to col. 3, line 2 and lines 33-35. Reitnauer discloses inks preferably containing 50-99 wt. % wax, and optionally containing low amounts propylene glycol or glycerin. *See* paragraphs [0019] and [0031]. Russell and Reitnauer therefore also fail to allow for the amounts of glycerine, 1,2-propanediol or combination of glycerine and 1,2-propanediol required by claim 23. Accordingly, one of skill in the art would not include glycerine, 1,2-propanediol or combination of the two in the amounts required by claim 23 using routine optimization, based on the disclosure of the cited references.

Moreover, none of the references teach or suggest an ink having the formulation and viscosity required by claim 23. The Examiner appears to assert that one of skill in the art would be motivated to optimize the viscosity to the claimed range based on Russell’s disclosure that the viscosity of an edible ink for spreading on a master printing plate may vary widely. Office action page 6, lines 12-24. However, Russell’s inks contain 70-80 % sweetener and have “a viscosity of about 2000 to about 16000 cp at 25°C.” Abstract. This viscosity is several orders of magnitude greater than the viscosity of the ink jet compatible inks disclosed in Shastry. One of

skill in the art would not be motivated to modify the viscosity of the ink-jet compatible inks of Shastry, based on Russell's disclosure that a high-viscosity ink may be made more or less viscous to facilitate its spreading on a master printing plate.

Allowance of claim 23 is respectfully requested.

Claims 24-41

Claims 24-28 and 30-41 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Shastry in view of Willcocks and Pasternak, and further in view of Russell and Reitnauer. Claim 29 was rejected as being unpatentable over Shastry in view of Willcocks and Pasternak and further in view of Russell and Reitnauer taken with U.S. Patent 6,299,374 to Naor et al. ("Naor"). Claims 24-41 each depend from allowable claim 23, and accordingly are allowable for at least the reasons set forth above for claim 23.

Claims 30, 31 and 38 are further allowable for the reasons set forth below.

Claims 30 and 31

Claim 30 requires that the colored fluid comprise no more than about 20 wt. % water. Claim 31 requires that the colored fluid comprise no more than about 1 wt. % water. Claims 30 and 31 are further allowable because as discussed above for claims 4 and 5, Shastry's solvent-based inks mentioned in paragraphs [0036] and [0037] are entirely discrete and distinct from the water-based pigmented inks discussed in paragraphs [0033] and [0034]. Shastry, taken alone or in combination with the cited references, fails to teach or suggest a colored fluid of the formulation required by claims 30 and 31. Accordingly, a *prima facie* case of obviousness has not been established for claims 30 and 31.

Claim 38

Claim 38 requires that the colored fluid has a silt density index of at least about 0.5.

The Examiner asserts that motivation to make the silt density index as low as possible comes from Reitnauer's disclosure that an edible ink contains low amounts of components that are not listed as GRAS or are not EAFUS-listed. However, as discussed above for claim 11, this limited disclosure fails to teach or suggest anything regarding the silt density index, not least because impurities that are not GRAS or EAFUS may be soluble, and consequently would make no contribution to the silt density index value. Accordingly, a *prima facie* case of obviousness has not been established for claim 38.

Allowance of claims 24-41 is respectfully requested.

Independent Claim 55

Claim 55 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Shastry in view of Willcocks and Pasternak, and further in view of Russell and Reitnauer.

The food grade colored fluid of claim 55 comprises a food grade dye with chloride and sulfate contents of no more than about 1000 ppm, at least about 85 wt. % 1,2-propanediol, about 2 to 10 wt. % glycerine, and no more than about 5 wt. % water, and has a viscosity of about 35 to 65 cps at 25° C, and a surface tension of about 35 to 50 dynes per cm at 25° C.

For the same and similar reasons set forth above with respect to claim 1, there is no teaching, suggestion or motivation to combine the references to arrive at the subject matter of claim 55.

Moreover, even assuming, *arguendo*, that the references are combinable, the references, taken alone or in combination, still do not teach or suggest each and every element of claim 55. The colored fluid of claim 55 requires at least about 85 wt. % 1,2-propanediol. Shastry does not teach or suggest colored fluids that include 1,2-propanediol, let alone at least about 85 wt. % 1,2-propanediol as required by claim 55. Moreover, Shastry defines “water-based” to mean “containing more water than non-aqueous solvent, which generally is substantially less non-aqueous solvent than conventional food-grade inks referred to as ‘solvent-based.’” Page 2, para [0017]. Therefore, Shastry does not teach or suggest a colored fluid containing no more than about 5 wt. % water, according to claim 1. Of course, because Shastry does not teach the composition of claim 55, Shastry also does not teach the composition of claim 55 having the viscosity property and surface tension property recited therein. Moreover, Shastry does not explicitly teach or suggest a colored fluid of the formulation required by claim 55 comprising a dye having chloride and sulfate contents of no more than about 1000 ppm for the same and similar reasons set forth above for claim 20.

Willcocks and Pasternak fail to cure the deficiencies of Shastry. Willcocks teaches that “[a]s the inks of the invention are water based, the carrier fluid will typically be comprised of water and alcohol.” Page 26, lines 10-12. As noted above, Willcocks merely indicates that a dispersant for the pigment may include glycerine, propylene glycol or polypropylene glycol in an amount from about 1 percent to about 48 percent. Page 27, line 21 bridging to page 28, line 3.

Pasternak discloses a pigmented ink containing 38 % water, 16 % glycerol and 22 % propylene glycol. Col. 16, lines 5-55. Accordingly, Pasternak fails to teach or suggest a colored fluid comprising “at least about 85 wt. % 1,2-propanediol” and making up “no more than about 5 wt. % water.” Furthermore, Willcocks and Pasternak merely disclose that dyes may be included with the pigments. For the same and similar reasons set forth above for claim 20, none of the cited references provide any explicit reason or suggestion to provide a colored fluid with a dye having chloride and sulfate contents of no more than about 1000 ppm.

Russell and Reitnauer, alone or in combination, do not cure the deficiencies of Shastri, Willcocks and Pasternak. Neither Russell nor Reitnauer teach or suggest a colored fluid comprising the amounts of propylene glycol, glycerin and water and having the surface tension and viscosity required by claim 55, let alone such a colored fluid comprising a dye having chloride and sulfate contents of no more than about 1000 ppm. One of skill in the art still would not be motivated to modify these teachings in any way to arrive at these particular amounts for the same and similar reasons set forth above for claims 1 and 20.

Allowance of claim 55 is respectfully requested.

Claims 56-62

Claim 56-60 and 62 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Shastri in view of Willcocks and Pasternak, and further in view of Russell and Reitnauer. Claim 61 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Shastri in view of Willcocks and Pasternak, and further in view of Russell and Reitnauer taken with Naor.

Claims 56-60 and 62 each depend from allowable claim 55, and accordingly are allowable for at least the reasons set forth above for claim 55. Claim 61 depends from allowable claim 55, and accordingly is allowable for at least the reasons set forth above for claim 55, since Naor fails to cure the deficiencies of Shastri, Willcocks, Pasternak, Russell and Reitnauer.

Claim 57 is further allowable for the reasons set forth below.

Claim 57

Claim 57 requires that the colored fluid has a silt density index of at least about 0.75.

The Examiner asserts that motivation to make the silt density index as low as possible comes from Reitnauer’s disclosure that an edible ink contains low amounts of components that are not listed as GRAS or are not EAFUS-listed. However, as discussed above for claim 11, this

limited disclosure fails to teach or suggest anything regarding the silt density index, not least because impurities that are not GRAS or EAFUS may be soluble, and consequently would make no contribution to the silt density index value. Accordingly, a *prima facie* case of obviousness has not been established for claim 57.

Allowance of claims 56-62 is respectfully requested.

Independent Claim 63

Claim 63 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Shastry in view of Willcocks and Pasternak, and further in view of Russell and Reitnauer.

The food grade colored fluid of claim 63 has a viscosity of about 35 to 65 cps at 25° C and comprises a food grade dye, at least about 85 wt. % 1,2-propanediol, about 2 to 10 wt. % glycerine, and no more than about 5 wt. % water.

For the same and similar reasons set forth above with respect to claim 1, there is no teaching, suggestion or motivation to combine the references to arrive at the subject matter of claim 63.

Moreover, even assuming, *arguendo*, that the references are combinable, the references, taken alone or in combination, still do not teach or suggest each and every element of claim 63. None of the references teach or suggest a colored fluid comprising at least about 85 wt. % 1,2-propanediol, about 2 to 10 wt. % glycerine, and no more than about 5 wt. % water, for the same and similar reasons set forth above for claim 55. One of skill in the art would not be motivated to modify the teachings of the references to arrive at the colored fluid recited in claim 63 for the same and similar reasons set forth above for claims 1 and 55.

Allowance of claim 63 is respectfully requested.

Claims 64-71

Claims 64-67 and 69-71 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Shastry in view of Willcocks and Pasternak, and further in view of Russell and Reitnauer. Claim 68 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Shastry in view of Willcocks and Pasternak, and further in view of Russell and U.S. Patent No. 4,307,117 to Leshik et al. (“Leshik”) taken with U.S. Patent No. 5,073,399 to Vassiliou (“Vassiliou”).

Claims 64-67 and 69-71 each depend from allowable claim 63, and accordingly are allowable for at least the reasons set forth above for claim 63. Claim 68 depends from allowable claim 63, and accordingly is allowable for at least the reasons set forth above for claim 55, since Leshik and Vassiliou fail to cure the deficiencies of Shastry, Willcocks, Pasternak, Russell and Reitnauer.

Claims 64-65 and 69-71 are also allowable for the reasons set forth below.

Claim 64

Claim 64 requires that the colored fluid has a silt density index of at least about 0.75.

The Examiner asserts that motivation to make the silt density index as low as possible comes from Reitnauer's disclosure that an edible ink contains low amounts of components that are not listed as GRAS or are not EAFUS-listed. However, as discussed above for claim 11, this limited disclosure fails to teach or suggest anything regarding the silt density index, not least because impurities that are not GRAS or EAFUS may be soluble, and consequently would make no contribution to the silt density index value. Accordingly, a *prima facie* case of obviousness has not been established for claim 64.

Claim 65

Claim 65 requires that the colored fluid have a surface tension of about 20 to 60 dynes per cm at 25° C. Claim 65 is allowable because, for the same and similar reasons set forth above for claim 55, none of the cited references teach or suggest an ink comprising a food grade dye, at least about 85 wt. % 1,2-propanediol, about 2 to 10 wt. % glycerine, and no more than about 5 wt. % water, and having a surface tension of about 20 to 60 dynes per cm at 25° C. Accordingly, a *prima facie* case of obviousness has not been established for claim 65.

Claims 69-71

Claim 69 requires that the food grade dye has a chloride ion content of no more than about 0.5 wt. %. Claim 70 requires that the food grade dye has a sulfate ion content of no more than about 0.5 wt. %. Claim 71 requires that the food grade dye has a chloride content of no more than about 1000 ppm and a sulfate content of no more than about 1000 ppm.

Claims 69-71 are also allowable because for the same and similar reasons set forth above for claim 20, none of the references explicitly teach or suggest a colored fluid of the recited formulations comprising a food grade dye having the chloride ion content or sulfate ion content

required by claims 69-71. Therefore, a *prima facie* case of obviousness has not been established for claims 69-71.

Allowance of claims 64-71 is respectfully requested.

Independent Claim 72

Claim 72 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Shastry in view of Willcocks and Pasternak, and further in view of Russell and Reitnauer.

Claim 72 requires a food grade dye, at least about 85 wt. % 1,2-propanediol, about 2 to 10 wt. % glycerine, and no more than about 5 wt. % water; wherein the colored fluid has a surface tension of about 20 to 60 dynes per cm at 25° C.

For the same and similar reasons set forth above with respect to claim 1, there is no teaching, suggestion or motivation to combine the references to arrive at the subject matter of claim 72.

Moreover, even assuming, *arguendo*, that the references are combinable, the references, taken alone or in combination, still do not teach or suggest each and every element of claim 72. None of the references teach or suggest a colored fluid comprising at least about 85 wt. % 1,2-propanediol, about 2 to 10 wt. % glycerine, and no more than about 5 wt. % water, for the same and similar reasons set forth above for claim 55. One of skill in the art would not be motivated to modify the teachings of the references to arrive at the colored fluid recited in claim 72 for the same and similar reasons set forth above for claims 1 and 55.

Claim 72 is also allowable because, for the same and similar reasons set forth above for claim 55, none of the cited references teach or suggest an ink comprising a food grade dye, at least about 85 wt. % 1,2-propanediol, about 2 to 10 wt. % glycerine, and no more than about 5 wt. % water, and having a surface tension of about 20 to 60 dynes per cm at 25° C.

Allowance of claim 72 is respectfully requested.

Claims 73-80

Claims 73-76 and 78-80 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Shastry in view of Willcocks and Pasternak, and further in view of Russell and Reitnauer. Claim 77 was rejected as being unpatentable over Shastry in view of Willcocks and Pasternak and further in view of Russell and Leshik taken with Vassiliou.

Claims 73 and 78-80 are also allowable for the reasons set forth below.

Claim 73

Claim 73 requires that the colored fluid has a silt density index of at least about 0.75.

The Examiner asserts that motivation to make the silt density index as low as possible comes from Reitnauer's disclosure that an edible ink contains low amounts of components that are not listed as GRAS or are not EAFUS-listed. However, as discussed above for claim 11, this limited disclosure fails to teach or suggest anything regarding the silt density index, not least because impurities that are not GRAS or EAFUS may be soluble, and consequently would make no contribution to the silt density index value. Accordingly, a *prima facie* case of obviousness has not been established for claim 73.

Claims 78-80

Claim 78 requires that the food grade dye has a chloride ion content of no more than about 0.5 wt. %. Claim 79 requires that the food grade dye has a sulfate ion content of no more than about 0.5 wt. %. Claim 80 requires that the food grade dye has a chloride content of no more than about 1000 ppm and a sulfate content of no more than about 1000 ppm.

Claims 78-80 are also allowable because for the same and similar reasons set forth above for claim 20, none of the references explicitly teach or suggest a colored fluid comprising a food grade dye having the chloride ion content or sulfate ion content required by claims 78-80. Therefore, a *prima facie* case of obviousness has not been established for claims 78-80.

Allowance of claims 73-80 is respectfully requested.

Independent Claim 81

Claim 81 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Shastry in view of Willcocks and Pasternak, and further in view of Russell and Reitnauer.

Claim 81 recites an inkjet ink having a surface tension of about 20 to 60 dynes per cm at 25° C and comprising a food grade dye, at least about 90 wt. % 1,2-propanediol, glycerine or a mixture thereof, and no more than about 5 wt. % water.

For the same and similar reasons set forth above with respect to claim 1, there is no teaching, suggestion or motivation to combine the references to arrive at the subject matter of claim 81.

Moreover, even assuming, *arguendo*, that the references are combinable, the references, taken alone or in combination, still do not teach or suggest each and every element of claim 81. None of the references teach or suggest an inkjet ink comprising at least about 90 wt. % 1,2-propanediol, glycerine or a mixture thereof, and no more than about 5 wt. % water, for the same and similar reasons set forth above for claim 23. One of skill in the art would not be motivated to modify the teachings of the references to arrive at the inkjet ink recited in claim 81 for the same and similar reasons set forth above for claims 1 and 23.

Claim 81 is also allowable because, for the same and similar reasons set forth above for claim 55, none of the cited references teach or suggest an inkjet ink comprising a food grade dye, at least about 85 wt. % 1,2-propanediol, about 2 to 10 wt. % glycerine, and no more than about 5 wt. % water, and having a surface tension of about 20 to 60 dynes per cm at 25° C.

Allowance of claim 81 is respectfully requested.

Claim 82

Claim 82 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Shastry in view of Willcocks and Pasternak, and further in view of Russell and Reitnauer. Claim 82 depends from allowable claim 81, and accordingly is allowable for at least the reasons set forth above for claim 81.

Allowance of claim 82 is respectfully requested.

Independent Claim 83

Claim 83 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Shastry in view of Willcocks and Pasternak, and further in view of Russell and Reitnauer.

Claim 83 recites an inkjet ink comprising a food grade dye; at least about 90 wt. % 1,2-propanediol, glycerine or a mixture thereof; and no more than about 5 wt. % water; wherein the inkjet ink has a viscosity of about 8 to 14 cps at 60° C.

For the same and similar reasons set forth above with respect to claim 1, there is no teaching, suggestion or motivation to combine the references to arrive at the subject matter of claim 83.

Moreover, even assuming, *arguendo*, that the references are combinable, the references, taken alone or in combination, still do not teach or suggest each and every element of claim 83.

None of the references teach or suggest an inkjet ink comprising at least about 90 wt. % 1,2-propanediol, glycerine or a mixture thereof, and no more than about 5 wt. % water, for the same and similar reasons set forth above for claim 23. One of skill in the art would not be motivated to modify the teachings of the references to arrive at the inkjet ink recited in claim 83 for the same and similar reasons set forth above for claims 1 and 23.

Allowance of claim 83 is respectfully requested.

Claim 84

Claim 84 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Shastry in view of Willcocks and Pasternak, and further in view of Russell and Reitnauer. Claim 84 depends from allowable claim 83, and accordingly is allowable for at least the reasons set forth above for claim 83.

Allowance of claim 84 is respectfully requested.

Double Patenting

Claims 1-6, 9-10, 12, 52 and 54 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-15, 17 and 39-40 of copending application 11/149,660 in view of U.S. Patent No. 4,512,807 to Ogawa et al. Without acceding that the rejection is proper or has merit, and purely in the interests of furthering prosecution, Applicants submit herewith a terminal disclaimer to U.S. Application No. 10/601,064. Applicants hereby reserve the right to challenge the Examiner's rejection in the future.

Claims 1-41, 52-84 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-15, 17 and 39-40 of copending application 10/918,197 in view of U.S. Patent No. 5,800,601 to Zou et al. ("Zou").

U.S. Application No. 10/918,197 has since issued as U.S. Patent No. 7,247,199 (the '199 patent). Applicants respectfully traverse the rejection.

The '199 patent claims inks which contain pigment or lakes, and shellac. The present claims recite colored fluids comprising a dye, which the instant specification defines as being "soluble in water and/or in the other cosolvents, which contain substantial amounts of glycols and/or glycerine, employed in the present colored fluids." The chemistries and properties of dye-

based and pigment-based fluids are different. In other words, one cannot substitute a pigment for a dye and expect the fluid to function in a comparable way. Zou merely discloses an edible ink comprising a particle-based colorant such as pigments or lakes. (See Abstract and col. 5, lines 25). Zou does not teach or suggest a colored fluid containing a dye as required by the present claims, and does not teach that shellac may be included in such a fluid. Accordingly, the present claims are patentable over those of the '199 patent in view of Zou.

CONCLUSION

In light of the foregoing, Applicants respectfully request withdrawal of the rejections and allowance of the claims. Should any issues remain, the undersigned encourages the Examiner to contact the undersigned at the number below.

Respectfully submitted,



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